

REMARKS

Claims 1-4, 6, 8-51, 53-57 and 59 are pending. Claims 1-4, 6, 8-51, 53-57 and 59 are rejected. Claims 1, 6, 8, 9, 11, 12, 14-21, 24, 35 and 59 are amended. This Response is filed in reply to the Office Action dated March 29, 2005.

Amendments to the claims are not an acquiescence to any of the rejections. Furthermore, silence with regard to any of the Examiner's rejections is not an acquiescence to such rejections. Specifically, silence with regard to Examiner's rejection of a dependent claim, when such claim depends from an independent claim that Applicants consider allowable for reasons provided herein, is not an acquiescence to such rejection of the dependent claim(s), but rather a recognition by Applicants that such previously lodged rejection is moot based on Applicants' remarks and/or amendments relative to the independent claims (that Applicants consider allowable) from which the dependent claim(s) depends. Applicants reserve the option to further prosecute the same or similar claims in the instant or a subsequent application. Upon entry of the Amendment, claims 1-4, 6, 8-51, 53-57 and 59 are pending in the present application.

With respect to the Office Action dated March 29, 2005, the Examiner rejected claim 18 under 35 U.S.C. §112, first paragraph, as failing to comply with the written description requirement. Applicants traverse the rejection and amend claim 18 to remove the limitation with regard to CMOS.

With respect to the rejections of the claims, the Examiner rejected claims 1, 3, 6, 8-12, 14-18, 20, 22, 35, 38-43, 46, 47, 54-56 and 59 under 35 U.S.C. §103(a) as being unpatentable over Dirscherl et al. (U.S. 5,001,348) in view of Norris (U.S. 5,719,567). The Examiner rejected claims 4, 21, 23, 28-34, 36, 37, 48-51, 53 and 57 under 35 U.S.C. §103(a) as being unpatentable over Dirscherl et al. in view of Norris and further in view of Applicants' admitted prior art. The Examiner rejected claim 27 under 35 U.S.C. §103(a) as being unpatentable over Dirscherl et al. in view of Norris and further in view of Palmer (U.S. 5,687,034). Claims 44 and 45 were rejected under 35 U.S.C. §103(a) as being

unpatentable over Dirscherl et al. in view of Norris and further in view of Hartemann et al. (U.S. 4,835,391). Applicants traverse the Examiner's rejections under 35 U.S.C. §103(a), and respectfully request reconsideration in view of the amendments and remarks.

As described in the specification and recited in the claims, Applicants' systems and methods are targeted to the viewing of a UV image in **daylight** (or indoor illumination equivalent to daylight) **overlaid on its natural background view**. From the present application discussion and from the examples given (for example, corona – see Figs. 9a and 9b) it becomes clear that an important object of the present invention is to show **both** of said images simultaneously in one display, overlaid in **exact registration**, and with no parallax, so that the user can determine the visible image details, and the UV image exact location within said visible image. For example, in Fig. 9b detection of corona on an insulator of a HV transmission tower is shown. In this case, the UV image of the corona is shown at its exact position within the visible scenery. It is obvious in this case (and other similar cases given within the application) that even a very small deviation, in the order of milliradians from the exact registration will detract from the usefulness of the apparatus. The exact registration of the two images produced by the two separate imaging units becomes possible due to the fact that both the UV image and the visible scenery are obtained through the same aperture and along the same optical axis. The images which are produced separately, are thereafter registered and combined to form one combined image. Amended independent claims 1, 8, and 35 now clearly include these structural characteristics.

The above characteristics, i.e., the displaying of a UV image and the visible scenery with exact registration and with no parallax provides a solution to a long felt need in many applications, some of them are disclosed in the application. In this respect, the Applicants comment that any invention involves at least two stages. A first stage is the noticing of a problem, and a second stage is the providing of a solution to the problem. In the present case, it can be seen that the two cited prior art (Norris and Dirscherl) have not even mentioned the above-described long felt need, and therefore they do not and cannot satisfy this need. In some aspects both Norris and Dirscherl teach away from the present invention.

In the response to the previous Office Action filed January 18, 2005, the Applicants explained in detail why the system of Dirscherl cannot display simultaneously a UV image of a weak source and a visible image **in daylight**. For the sake of brevity, the Applicants will not repeat all said technical explanations here, and will just refer again the Examiner to said explanations. In support of these observations and in accordance with 37 C.F.R. §1.132, Applicants now submit the attached affidavit by Mr. Jeremy M. Topaz dated July 27, 2005, including a Curriculum Vitae.

In short, Dirscherl discloses a system which has two modes of operation. In the first mode, the system of Dirscherl, using a wide band photocathode, is a multi-spectral system, i.e., UV, IR, and visible. In that case, the UV image can be acquired only at dark and not in daylight (unless the UV source is of extremely high intensity, and is received at the apparatus with very high contrast over the solar radiation-see comment below). In the second mode, when the system of Dirscherl uses a UV photocathode (CsTe, RbTe) it can display a UV image in daylight, however, no display of the visible view or of the IR image can be obtained simultaneously with the UV image. Therefore, is the system of Dirscherl a multi-spectral one that includes the SBUV range? Yes, but **only** when operating in the first mode (dark operation). Does it enable view of a SBUV image of a weak source in daylight? Yes, but only in the second mode, and without the visible background scenery. Does it provide registration of the UV image within the visible background scenery? In daylight absolutely not, as no UV image can be acquired simultaneously with the visual background scenery. However, even at dark when visible and UV (or UV and IR) images are acquired in Dirscherl, what does Dirscherl do with said UV and IR images? He displays them on two separate displays (see Fig. 7), or separated one from the other on a same display, as shown in Fig. 12. In this respect Dirscherl clearly teaches away from the invention.

Norris also teaches away from the present invention. First, does the invention of Norris try to show a UV image in daylight, in its exact overlay registration within the visible scenery? No, as the system of Norris is targeted to a case where there is essentially no visible scenery (see, for example, col. 4 lines, 1, 33-34 50-60, and more...), and as when there is a visible scenery, the system of Norris is not necessary and becomes absolutely

useless. Moreover, does Norris's system have two separate imaging units? No. Norris says in Col. 8, lines 28-34: *"Display device 140 is preferably a transparent head-up display, helmet-mounted sight, visor, or a device that displays the image or representation on a medium interposed between the operator's eye and his view of the actual, related scene. Alternatively, the image can be displayed on a monitor or integrated with the display of another sensor, such as a radar display"*. In the case of a head-up display where the UV image is projected on the display, there is no second visible imaging unit, there is only the normal visible view that the pilot sees (and as Norris's system operates when there is no visibility, there is no visual view to be seen). This is exactly the case also with the helmet mounted sight, visor, and with all the other devices that Norris suggests. Even when Norris suggests using a monitor he does not mention a visible view. It is clear that Norris does not mention a visible view, as this view is irrelevant in the low visibility conditions where Norris operates. Therefore, Norris in fact teaches away from the present invention, not putting any emphasis to the visible view. Furthermore, Norris does not suggest the acquiring of the visible image (that as said in Norris essentially does not exist) and the UV image through a same aperture, and along a same optical axis as in amended independent claims 1, 8, and 35 (in which the IR replaces the visible image) in order to eliminate parallax. Therefore, the apparatus of Norris cannot be used where exact registration is necessary and where parallax should be eliminated as the present invention enables.

The Applicants cannot see how a combination of the above two publications, which each in its own way teaches away from the present invention, can be used to negate novelty and inventiveness from the present invention. None of said publications is even targeted to solving the problems that the present invention solves, and both of them, either alone or even in combination still lack features that are essential to the independent claims of the present invention. The publications cited by the Examiner include some "building blocks" elements that are used in the present invention, but they are both, either alone or in combination, far from suggesting or teaching the present invention. In this situation, the Applicants cannot see how one can reach the present invention by using teaching from said two publications and with no hindsight. Therefore, the Applicants believe that the

combination of said publications is inappropriate in the first place, but even when such inappropriate combination is made, it still does not teach or suggest all of the features of Applicants' claims.

The Examiner states that "Thus Dirscherl et al. teach an apparatus comprising an imaging unit "in combination with suitable filters" for detecting images "in a special wavelength range (solar blind) with a maximum filtering (absorption) of all other wave lengths of any light present". The Examiner adds that "Thus, Dirscherl et. Al. expressly discloses a multi-spectral system that includes at least a SBUV (240-280 nm) imaging unit." Although the Examiner is formally correct that the system of Dirscherl as a whole is multi-spectral and includes at least a SBUV imaging unit, in view of what has been stated above and of the affidavit of Mr. Jeremy M. Topaz, MSEE, it is clear that in the daylight mode, which is the only mode relevant to the present invention, where "a maximum filtering (absorption) of all other wave lengths of any light present" is required, the system of Dirscherl is not multi-spectral, and it cannot simultaneously show in full daylight the UV image and the visible image, and of course it cannot show the UV image overlaid on the visible image in exact registration.

In page 17, last paragraph the Examiner indicates that the separation between the imaging units is not recited in the rejected claims. Independent claims 1, 8 and 35 have now been amended to clearly indicate that there are two separate imaging units, where the UV imaging unit comprises a UV filter and SBUV photocathode.

Finally, the Examiner states in page 19, lines 8-10 that "Therefore, it would have been obvious to one having ordinary skill in the art at the time of the invention to superimpose the first and second visible images in the apparatus of Dirscherl et al. in a vision aid application, in order to aid the vision of an operator". However, and as said above, in **daylight** Dirscherl apparatus cannot acquire simultaneously the image of the UV source together with the visible and/or IR images. Therefore, in daylight there are no first and second images in the apparatus of Dirscherl. Therefore, the superimposing as suggested by the Examiner cannot be made in daylight, which is the only situation relevant to the present invention.

It should be noted that the above is correct for conventional cases. In cases in which the UV source is of extremely high intensity and when the UV light is received at the apparatus aperture with very high contrast over the solar radiation, one may succeed in detecting a UV source and the visual image simultaneously on a single wide-band photocathode. However, and as explained in the application the present application does not relate to such extreme cases.


Therefore, the Applicants believe that the independent claims 1, 8 and 35 as now amended are patentable over the references cited by the Examiner and allowance of claims 1, 8 and 35 is respectfully requested. Claims 2-4, 6, 9-34, 36-51, 53-57 and 59, depend either directly or indirectly from respective claims 1, 8 and 35 and are allowable at least by dependency.

CONCLUSION

Based on the above amendments and remarks, it is respectfully submitted that the claims and thus this application are in condition for allowance. Accordingly, allowance is requested. If there are any remaining issues or the Examiner believes that a telephone conversation with Applicants' attorney would be helpful in expediting the prosecution of this application, the Examiner is invited to call the undersigned at (617) 832-1175.

Respectfully submitted,

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